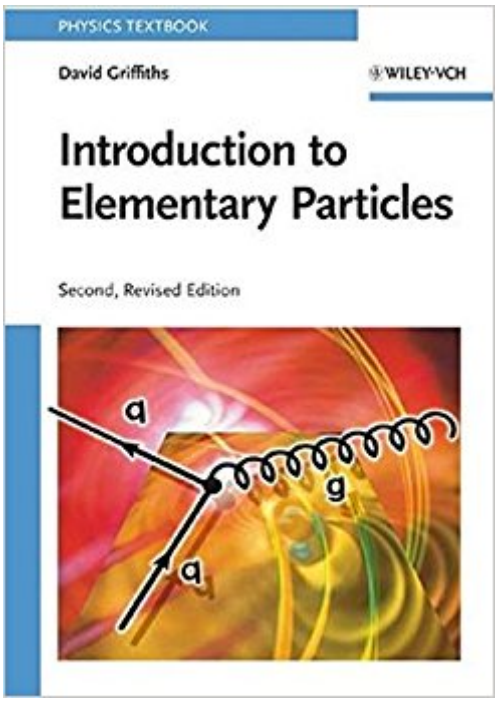
Introduction To Elementary Particles



Synopsis

In the second, revised edition of a well-established textbook, the author strikes a balance between quantitative rigor and intuitive understanding, using a lively, informal style. The first chapter provides a detailed historical introduction to the subject, while subsequent chapters offer a quantitative presentation of the Standard Model. A simplified introduction to the Feynman rules, based on a "toy" model, helps readers learn the calculational techniques without the complications of spin. It is followed by accessible treatments of quantum electrodynamics, the strong and weak interactions, and gauge theories. New chapters address neutrino oscillations and prospects for physics beyond the Standard Model. The book contains a number of worked examples and many end-of-chapter problems. A complete solution manual is available for instructors.

Book Information

Paperback: 470 pages
Publisher: Wiley-VCH; 2nd edition (October 13, 2008)
Language: English
ISBN-10: 3527406018
ISBN-13: 978-3527406012
Product Dimensions: 6.7 x 1 x 9.4 inches
Shipping Weight: 2 pounds (View shipping rates and policies)
Average Customer Review: 4.5 out of 5 stars 59 customer reviews
Best Sellers Rank: #70,952 in Books (See Top 100 in Books) #4 inÃ Â Books > Science & Math > Physics > Nuclear Physics > Particle Physics #275 inÃ Â Books > Engineering & Transportation > Engineering > Reference #295 inÃ Â Books > Textbooks > Science & Mathematics > Physics

Customer Reviews

?I?d recommend this book to anyone in the field and anyone lecturing in it. It?s wonderful. Reading any section will always yield insights, and you can?t go wrong with Griffiths as a guide.? (Times Higher Education Supplement, December 2009) ?A clearly written textbook balancing intuitive understanding and mathematical rigour, emphasizing elementary particle theory.? (Reviews, May 2009)

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presentation of the Standard Model. A simplified introduction to the Feynman rules, based on a "toy" model, helps readers learn the calculational techniques without the complications of spin. It is followed by accessible treatments of quantum electrodynamics, the strong and weak interactions, and gauge theories. New chapters address neutrino oscillations and prospects for physics beyond the Standard Model. The book contains a number of worked examples and many end-of-chapter problems. A complete solution manual is available for instructors. - Revised edition of a well-established text on elementary particle physics - With a number of worked examples and many end-of-chapter problems - Helps the student to master the Feynman rules - Solution manual available for instructors David Griffiths is Professor of Physics at the Reed College in Portland, Oregon. After obtaining his PhD in elementary particle theory at Harvard, he taught at several colleges and universities before joining the faculty at Reed in 1978. He specializes in classical electrodynamics and quantum mechanics as well as elementary particles, and has written textbooks on all three subjects.

Best Teaching Company course I have taken. Well presented with the right level of detail. Displays the key equations showing their form but does not dwell on the math. Presents the latest results (thru 2016) and covers remaining problems/anomalies and research areas. Explains the irreconcilabilty of quantum mechanics and general relativity. Visual format superior over any audio - only one.

This book contains 53 typos and other errors that you'll need to correct, ranging from minor to debilitating. I cannot fathom why the publisher still has not corrected these in the 6th printing of the 2nd edition (2011), when Griffiths sent them the corrections in 2009. And the brand new, shrink-wrapped copy that I ordered directly from themselves didn't even include the errata sheet listing the 53 corrections! I had to download this errata sheet myself (won't let me post the link, but it's a simple Google search.) Bad form, . And bad form, Wiley-VCH.With these corrections (that I penciled into my copy before reading), it's an excellent book. All books have corrections like these during the final editing process; it's perfectly normal. What's not normal is that the publisher never applied the corrections.I knocked off 2 stars for the missing errata sheet, which could cause unaware readers hours of confusion.

Like Griffiths' Introduction to Quantum Mechanics, this book is aimed at the undergraduate with only a limited background in math and physics. All the math and physics required beyond basic

freshman calculus and physics is developed in the book in a clear, straightforward way. The book starts with a brief introduction placing the field as a whole in perspective, then follows with a longer overview of the history of the field. Then begins the fun! First the forces and particles are introduced. Then there is a detailed treatment of special relativity and relativistic particle kinematics. Following this there is a chapter on group theory and symmetries in particle physics. Then bound states are discussed, including relativistic corrections to the energy levels of the hydrogen atom, positronium, and charmonium. Then the Feynman approach to quantum field theory is introduced, using a toy theory which simplifies the basic concepts. Following this quantum electrodynamics is discussed, including the Dirac equation, spinors, the Feynman rules, etc. Everything is clearly spelled out so the reader doesn't have to fill in any gaps herself. Techniques for doing calculations are reviewed, followed by some basic important calculations which show how the theory gives results expressed as cross sections and lifetimes. Following this there is a discussion of the electromagnetic and chromodynamic interactions of quarks, electroweak theory, gauge theories, symmetry breaking, the Higgs mechanism, neutrino oscillations, and possible future developments.This is the book to get if you want to learn this subject on your own with a limited background in physics and math. Nothing important is left out, the explanations are clear, there are numerous problems at the end of each chapter which are very illuminating, the text is carefully proofread and almost error-free. This book will equip you to tackle more advanced books on quantum field theory or the Standard Model of particle physics if you have such an ambition. It will allow you to begin to grasp this field at the level it really lives, i.e., the mathematics, rather than having to rely on verbal descriptions in books for laymen which ultimately raise more questions than they answer.

I bought this book as a fun read after getting though Stephen Hawking's "A Brief History of Time" and becoming fascinated with particle physics. I am an engineer and have a solid foundation in math so it was not an impossible read, but did find it quite challenging. The early chapters have a no-math history of particle physics, and then begin to become more and more complex, building on chapter-after-chapter of new conceptual and quantitative theory.

My 16 yr old son asked for this book for Christmas. He had been reading it daily since Christmas Day, he says "this is a really good book". I know strange gift request.

Griffith's book is a straight-forward and easy-to-follow introduction to particle physics. The book doesn't require the reader to have much background in particle physics, mostly just quantum

mechanics and Lagrangian physics. Quantum field theory is definitely not necessary to learn from this book, although it'll probably be helpful.The book focuses more on "how" rather than "why," so it's a great starting point for experimentalists. Griffith's writes in a very casual and simple style; you won't find much mathematical jargon here. I'd recommend this book overÃ Â Quarks and Leptons: An Introductory Course in Modern Particle Physics. Once you learn from this text the basics of the Standard Model and how to calculate amplitudes, cross-sections, decay rates, etc., you'll be ready to move on to more theoretical material (such asÃ Â Quarks and Leptons: An Introductory Course in Modern Particle Physics) to answer the question of "why."

Best starter book for field theory

and Systems Statistical Physics of Particles Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles